Air Force SBIR Impact

Innovative Machinery Diagnostic System

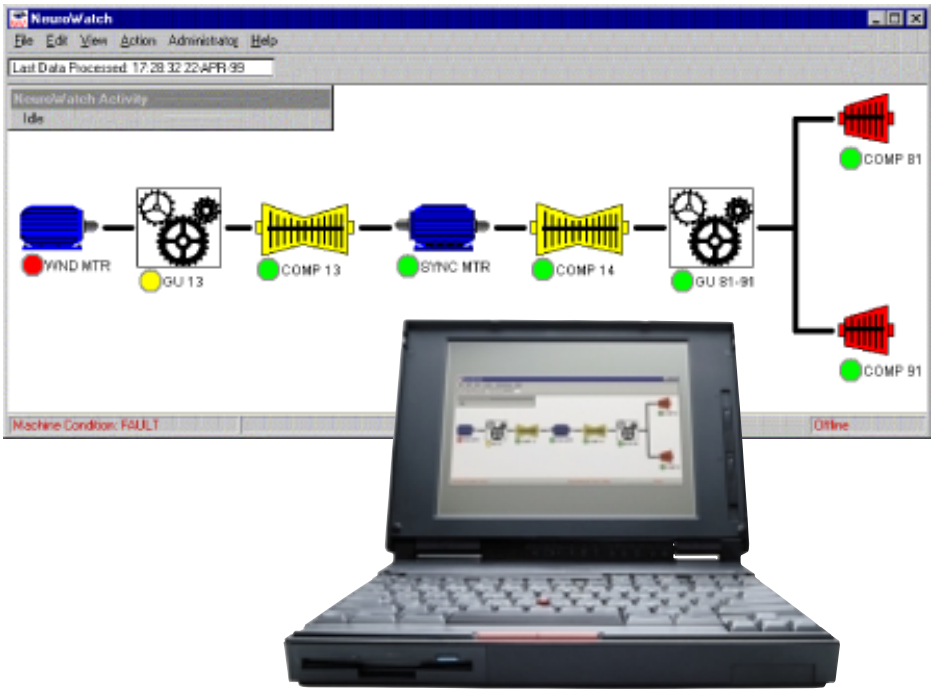
Company:
Orincon Corporation

Location:
San Diego, CA

Employees:
160

President:
Daniel L. Alspach, Ph.D.

Project Officer:
Kevin Zysk, Ph.D.
Arnold Engineering Development Center, Arnold AFB, TN



Air Force Requirement:

For a number of years the Air Force, along with the Army and Navy have been seeking a means of automatically measuring the health of engines, gearboxes and rotor systems to permit prediction of catastrophic mechanical failure and open the door to on-condition, as opposed to periodic, maintenance. On-board sensors are needed to collect data for later download to a low-cost, portable offboard processing system to permit after-action health reporting and diagnostics. In addition to the lives that could be saved by eliminating mechanical failures, the savings in maintenance cost, especially for high maintenance equipment such as rotary aircraft, could reach hundreds of millions of dollars each year. Department of Defense agencies have solicited Small Business Innovation Research Program (SBIR) efforts on machine health monitoring in every fiscal year since 1991.

For more information on this story, contact Air Force TechConnect at 1-800-203-6451 or at www.afrl.af.mil/techconn/index.htm

SBIR Technology:

ORINCON Corporation was awarded a series of nine SBIR Phase I efforts for seven different Navy, Army and Air Force agencies extending from 1992 to the present to explore different aspects of the machine health measurement problem. These led to a Phase II contract with the Air Force's Arnold Engineering Development Center in Tennessee. During this Phase II, prototype equipment was developed and demonstrated. ORINCON's automated machine health monitoring and fault prediction technology is based on advanced signal processing of vibration data using neural networks. The technique provides real diagnostic solutions for the first time, indicating progressive damage in rotating machinery from vibration patterns, and predicting the potential for mechanical failure. Currently, a Phase III development contract calls for development of enhanced vibration monitoring capability for attack and utility transport helicopters and this should lead the to similar applications for all types of rotating machinery, including turbine engines, gearboxes and electrical generators.

Company Impact:

In a follow-on to the AEDC development contract, ORINCON has been awarded Phase III development contracts with total worth of $6.5 million. The contracts have called for development of an enhanced vibration monitoring capability for the AH-64 Apache attack and UH-60A Black Hawk utility transport helicopters. This initial helicopter application is expected to lead the way to similar applications for all types of rotating machinery, including turbine engines, gearboxes, and electrical generators.

Company Quote

"This program illustrates the combination of technical excellence and perseverance required to transition all the way from SBIR to commercial products."

Daniel L. Alspach, Ph.D.
President & CEO

SBIR

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